

Complete Summary

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TITLE

Diabetes mellitus: lower-extremity amputation rate.

SOURCE(S)

AHRQ quality indicators. Guide to prevention quality indicators: hospital admission for ambulatory care sensitive conditions [revision 3]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2004 Jan 9. Various p. (AHRQ Pub; no. 02-R0203).

Brief Abstract

DESCRIPTION

This indicator assesses the number of admissions for lower-extremity amputation among patients with diabetes per 100,000 population.

RATIONALE

Diabetes is a major risk factor for lower-extremity amputation, which can be caused by infection, neuropathy, and microvascular disease.

Proper and continued treatment and glucose control may reduce the incidence of lower-extremity amputation, and lower rates represent better quality care.

PRIMARY CLINICAL COMPONENT

Diabetes mellitus; lower-extremity amputation; hospital admission rates

DENOMINATOR DESCRIPTION

Population in Metropolitan Statistical Area (MSA) or county, age 18 years and older

NUMERATOR DESCRIPTION

Discharges, age 18 years and older, with International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) procedure codes for lower-extremity amputation in any field and diagnosis codes for diabetes in any field.

Discharges with trauma, patients transferring from another institution, Major Diagnostic Category (MDC) 14 (pregnancy, childbirth, and puerperium), or MDC 15 (newborns and other neonates) are excluded.

Evidence Supporting the Measure

PRIMARY MEASURE DOMAIN

Outcome

SECONDARY MEASURE DOMAIN

Access
Process

EVIDENCE SUPPORTING THE MEASURE

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Evidence Supporting Need for the Measure

NEED FOR THE MEASURE

Wide variation in quality for the performance measured

EVIDENCE SUPPORTING NEED FOR THE MEASURE

AHRQ quality indicators. Guide to prevention quality indicators: hospital admission for ambulatory care sensitive conditions [revision 3]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2004 Jan 9. Various p. (AHRQ Pub; no. 02-R0203).

State of Use of the Measure

STATE OF USE

Current routine use

CURRENT USE

Internal quality improvement
National health care quality reporting
Quality of care research

Application of Measure in its Current Use

CARE SETTING

Ambulatory Care
Community Health Care

PROFESSIONALS RESPONSIBLE FOR HEALTH CARE

Advanced Practice Nurses
Physician Assistants
Physicians

LOWEST LEVEL OF HEALTH CARE DELIVERY ADDRESSED

Counties or Cities

TARGET POPULATION AGE

Age greater than or equal to 18 years

TARGET POPULATION GENDER

Either male or female

STRATIFICATION BY VULNERABLE POPULATIONS

Unspecified

Characteristics of the Primary Clinical Component

INCIDENCE/PREVALENCE

- Lower-extremity amputation affects up to 15% of all patients with diabetes in their lifetimes.
- In the United States (U.S.), diabetes is the leading cause of nontraumatic amputations (approximately 57,000 per year).

EVIDENCE FOR INCIDENCE/PREVALENCE

Centers for Disease Control and Prevention (CDC). National diabetes fact sheet: national estimates and general information on diabetes in the United States. Atlanta (GA): U.S. Department of Health and Human Services; 1999.

Mayfield JA, Reiber GE, Sanders LJ, Janisse D, Pogach LM. Preventive foot care in people with diabetes (technical review). Diabetes Care 1998 Dec; 21(12):2161-77.

ASSOCIATION WITH VULNERABLE POPULATIONS

Unspecified

BURDEN OF ILLNESS

Unspecified

UTILIZATION

Unspecified

COSTS

Unspecified

Institute of Medicine National Healthcare Quality Report Categories

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness
Timeliness

Data Collection for the Measure

CASE FINDING

Both users and nonusers of care

DESCRIPTION OF CASE FINDING

All individuals age 18 years and older in a Metropolitan Statistical Area (MSA) or county

DENOMINATOR SAMPLING FRAME

Geographically defined

DENOMINATOR (INDEX) EVENT

Patient Characteristic

DENOMINATOR INCLUSIONS/EXCLUSIONS

Inclusions

All individuals age 18 years and older in geographic areas defined at the Metropolitan Statistical Area (MSA) level or the county level

Exclusions

Unspecified

NUMERATOR INCLUSIONS/EXCLUSIONS

Inclusions

Discharges, age 18 years and older, with International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) procedure codes for lower-extremity amputation in any field and diagnosis codes for diabetes in any field (see Appendix A of the original measure documentation for ICD-9-CM codes)

Exclusions

Discharges with trauma, patients transferring from another institution, Major Diagnostic Category (MDC) 14 (pregnancy, childbirth, and puerperium), or MDC 15 (newborns and other neonates) are excluded (see Appendix A of the original measure documentation for ICD-9-CM codes).

DENOMINATOR TIME WINDOW

Time window is a single point in time

NUMERATOR TIME WINDOW

Encounter or point in time

DATA SOURCE

Administrative data

LEVEL OF DETERMINATION OF QUALITY

Not Individual Case

OUTCOME TYPE

Proxy for Outcome

PRE-EXISTING INSTRUMENT USED

Unspecified

Computation of the Measure

SCORING

Rate

INTERPRETATION OF SCORE

Better quality is associated with a lower score

ALLOWANCE FOR PATIENT FACTORS

Analysis by subgroup (stratification on patient factors)
Risk adjustment method widely or commercially available

DESCRIPTION OF ALLOWANCE FOR PATIENT FACTORS

Observed (raw) rates may be stratified by areas (Metropolitan Statistical Areas or counties), age groups, race/ethnicity categories, and sex.

Risk adjustment of the data is recommended using age and sex.

Application of multivariate signal extraction (MSX) to smooth risk adjusted rates is also recommended.

STANDARD OF COMPARISON

External comparison at a point in time
External comparison of time trends
Internal time comparison
Prescriptive standard

PRESCRIPTIVE STANDARD

Healthy People 2010 has set a goal of reducing the number of lower-extremity amputations to 1.8 per 1,000 persons with diabetes.

EVIDENCE FOR PRESCRIPTIVE STANDARD

U.S. Department of Health and Human Services. Healthy people 2010: understanding and improving health. Conference ed. Washington (DC): Government Printing Office; 2000. 3 volumes p.

Evaluation of Measure Properties

EXTENT OF MEASURE TESTING

Each potential quality indicator was evaluated against the following six criteria, which were considered essential for determining the reliability and validity of a quality indicator: face validity, precision, minimum bias, construct validity, fosters real quality improvement, and application. The project team searched Medline for articles relating to each of these six areas of evaluation. Additionally, extensive empirical testing of all potential indicators was conducted using the 1995-97 Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID) and Nationwide Inpatient Sample (NIS) to determine precision, bias, and construct validity. Table 1 in the original measure documentation summarizes the results of the literature review and empirical evaluations on the Prevention Quality Indicators. Refer to the original measure documentation for details.

EVIDENCE FOR RELIABILITY/VALIDITY TESTING

AHRQ quality indicators. Guide to prevention quality indicators: hospital admission for ambulatory care sensitive conditions [revision 3]. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2004 Jan 9. Various p. (AHRQ Pub; no. 02-R0203).

Identifying Information

ORIGINAL TITLE

Rate of lower-extremity amputation among patients with diabetes.

MEASURE COLLECTION

[Agency for Healthcare Research and Quality \(AHRQ\) Quality Indicators](#)

MEASURE SET NAME

[Agency for Healthcare Research and Quality \(AHRQ\) Prevention Quality Indicators](#)

DEVELOPER

Agency for Healthcare Research and Quality

INCLUDED IN

National Healthcare Disparities Report (NHDR)
National Healthcare Quality Report (NHQR)

ADAPTATION

This measure was not adapted from another source.

RELEASE DATE

2001 Oct

REVISION DATE

2004 Jan

MEASURE STATUS

This is the current release of the measure.

SOURCE(S)

AHRQ quality indicators. Guide to prevention quality indicators: hospital admission for ambulatory care sensitive conditions [revision 3]. Rockville (MD): Agency for

Healthcare Research and Quality (AHRQ); 2004 Jan 9. Various p. (AHRQ Pub; no. 02-R0203).

MEASURE AVAILABILITY

The individual measure, "Rate of Lower-Extremity Amputation among Patients with Diabetes," is published in "AHRQ Quality Indicators. Guide to Prevention Quality Indicators: Hospital Admission for Ambulatory Sensitive Conditions." This document is available in [Portable Document Format \(PDF\)](#) and a [zipped WordPerfect\(R\) file](#) from the [Quality Indicators](#) page at the Agency for Healthcare Research and Quality (AHRQ) Web site.

COMPANION DOCUMENTS

The following are available:

- "AHRQ Prevention Quality Indicators Software (Version 2.1 Revision 3)" (Rockville, [MD]: AHRQ, 2004 Jan 9) and its accompanying documentation can be downloaded from the [Agency for Healthcare Research and Quality \(AHRQ\) Web site](#). (The software is available in both SAS- and SPSS-compatible formats.)
- "HCUPnet, Healthcare Cost and Utilization Project" [internet]. (Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2004 [Various pagings]). HCUPnet is available from the [AHRQ Web site](#).
- "Refinement of the HCUP Quality Indicators" (Rockville [MD]: AHRQ, 2001 May. Various pagings. [Technical review; no. 4]; AHRQ Publication No. 01-0035). This document was prepared by the UCSF-Stanford Evidence-based Practice Center for AHRQ and can be downloaded from the [AHRQ Web site](#).

NQMC STATUS

This NQMC summary was completed by ECRI on December 19, 2002. The information was verified by the Agency for Healthcare Research and Quality on January 9, 2003. This NQMC summary was updated by ECRI on April 6, 2004.

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